Global Nuclear Energy Partnership (GNEP) Site Map

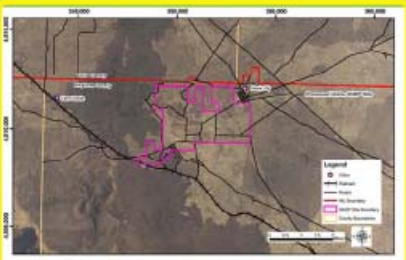
GNEP Safe, clean nuclear power

PROPOSED SITE

Proposed GNEP Site—Atomic City, Idaho

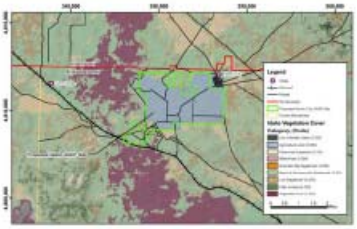
- Located in southeast Idaho desert at Atomic City
- Proposed site is former agricultural land use
- Consists of 3,300 acres, which exceeds minimum size requirements for either or both demonstration facilities
- The Idaho National Laboratory borders the proposed site

- Located in northwest Bingham County
- 50-mile radius includes 14 counties and 60 towns
- Minimal flood risk



- 3,300 acres located west of Atomic City
- Interstate Highway system access via U.S. 20 and U.S. 26
- Rail system access is located on southwest corner of property

The landscape includes
- Wheatgrass
- Cheatgrass



- Unutilized agricultural property
- Landowner commitment
- Strong community support and statewide support for GNEP initiative

North Wind

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Global Nuclear Energy Partnership (GNEP) Sellafield Site, Cumbria, England

GNEP Safe, clean nuclear power

SELLAFIELD SITE

- Location: West Cumbria, northwest England
- Large rural area with extensive agriculture
- Situated on the coast adjacent to Lake District National Park

Photo of site with THORP in foreground

- Opened in 1951 as a multi-purpose nuclear site
- 7 nuclear reactors
- 3 reprocessing plants, which have processed 50,000 tons of spent fuel
- Fuel Fabrication Facilities
- Numerous Waste Treatment Facilities

THORP

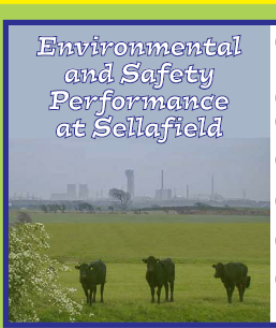
Photo of flask being taken into THORP

- Third generation facility with advanced technology
- Solely commercial business with UK, European, and Japanese customers
- Fully integrated with waste treatment processes
- Liquid wastes from separation are converted to high-level waste
- All incidental solid waste is converted to stable forms suitable for disposal

Economic Benefits

- 12,000 on-site employees
- Major contributor to the economy of Cumbria and northwest England
- Excellent buffer against the loss of jobs in the traditional industries of mining, iron/steel, shipbuilding/chemicals
- Sellafield visitor centre is major tourist attraction
- Education, infrastructure, housing, local towns, and other industry have all benefited
- Growth of new industry, initially supplying or spinning off Sellafield

Environmental and Safety Performance at Sellafield



- No member of the public receives significant radiation exposures from site activities—the radiation levels are typically much less than natural background radiation
- Worker radiation doses are less than 6% of authorized limit
- Discharges to the environment are low and less than authorized limit
- New technology has been used to reduce discharges by more than a hundred fold in the past 25 years
- Worker accident and injury rates are very low, and the Sellafield work force has received numerous safety awards
- Spent nuclear fuel has been safely transported to the site by road, rail, and sea for over 40 years without any release of radioactivity
- Extensive environmental monitoring are conducted by authorities and independent groups

Sellafield has strong national, regional, and local community support. Thousands of people visit Sellafield each year and are always impressed with the operations.

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Global Nuclear Energy Partnership (GNEP) Advanced Mixed Waste Treatment Project

GNEP
Ground breaking to operations in 46 months

BACKGROUND

- Demonstrated experience in designing and building a nuclear facility ahead of schedule, while addressing stakeholder and community input

Aerial view of the facility

AMWTP MISSION

- The AMWTP facility mission is to meet all regulatory requirements to safely retrieve, characterize, treat, and package transuranic waste for shipment out of Idaho National Laboratory

AMWTP TIMELINE

- AMWTP Contract Mobilized January 1997
- Project Modified to Remove Incinerator March 2000
- Construction Start—Groundbreaking August 2000
- Construction End December 2002
- Operations for Waste Retrieval & Characterization Begins March 2003
- WIPP Certification Received First Shipments of Waste March 2004
- Radioactive Waste Treatment in AMWTF Begins January 2005
- Facility sold to DOE May 2005

ECONOMIC BENEFITS

- Recruited and trained an operational workforce of over 700 people
- Qualified approximately 300 people who had no previous experience in the nuclear industry, including several who came from the southeast Idaho farming community
- Created over 700 new direct new jobs in Idaho and 250 indirect jobs (supply side)
- During operations, over 90% of materials required were sourced locally
- During the construction of the facilities over $350M was spent on material and equipment in the northwest region—over 70% in northern Utah and southern Idaho

CHALLENGES

- Schedule compression due to litigation and flowsheet change
- Multiple categories of sludge waste
- Achieving Waste Isolation Pilot Plant (WIPP) certifications in parallel with steep ramp-up in production
- Starting up first of a kind nuclear facility in the U.S. and maintaining safe, compliant operations

Before the soil was removed (left) then after the soil was removed (right)

AMWTP—excellent communications with stakeholders

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Global Nuclear Energy Partnership (GNEP) Overview

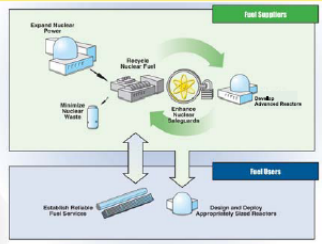
GNEP
The key to meeting future energy demands

INTRODUCTION

The Department of Energy is investigating the interest and ability of industry to deploy an integrated recycling capability consisting of two facilities:

- **A nuclear fuel recycling center**
- **An advanced recycling reactor**

MISSION

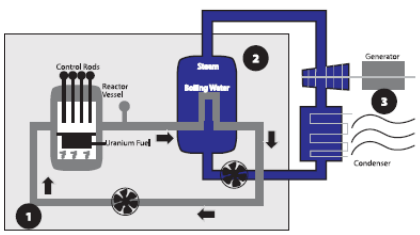


- Advanced Fuel Cycle Initiative to develop enhanced technologies for utilizing spent nuclear fuel
- Manage and reduce nuclear waste, including permanent disposal at Yucca Mountain
- Recycle nuclear fuel to recover more energy and reduce waste
- Utilize the latest technologies to reduce the risk of nuclear proliferation worldwide
- Encourage the growth of prosperity and sustainable development around the world
- Meet increased energy demand while reducing use of fossil fuels
- Improve the environment

GNEP BENEFITS

- Provides abundant energy without generating carbon emissions or other greenhouse gasses
- Recycle used nuclear fuel
- Reduce the number of waste repositories to one for the remainder of the century
- Reduce dependence on fossil fuels

NUCLEAR POWER BASICS



- Nuclear power currently provides 20% of U.S. electricity
- Nuclear power reactors do not emit air pollution or greenhouse gasses and provide 70% of emission free electricity generation
- A typical commercial nuclear power plant generates electricity by fission (splitting) of uranium to produce heat and steam which drives a turbine

GNEP is needed to increase U.S. and global energy security

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Global Nuclear Energy Partnership (GNEP) Safety and Transportation

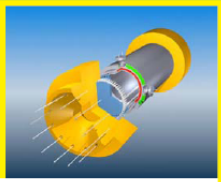
GNEP
Spent nuclear fuel transportation has an exemplary safety record

INTRODUCTION

1. Safe transportation of spent nuclear fuel has been occurring for 40 years worldwide
2. There have been no accidents resulting in release of radiation
3. Over 3,000 shipments by road and rail totaling over 1.6 million miles in the U.S. in the last 30 years
4. Over 750 shipments per year worldwide by road, rail, and sea—over 16 million miles in the last 40 years

SAFETY

A 120-ton locomotive, speeding at 80 miles an hour, crashed broadside into a container on a flatbed. The impact demolished the train, but hardly dented the container.



- Casks constructed with thick steel walls, dense shielding materials, and impact mitigation features
- Designed to meet stringent U.S. and international regulations
- Evaluated using state-of-the-art analysis tools
- Tested under bounding conditions
- Extreme real-world tests confirm conservatism of regulations

SECURE SHIPMENTS

- All spent fuel shipments are monitored real-time
- All shipments include armed escorts and notification of law enforcement agencies
- Casks are almost impossible to damage
- Spent fuel is a solid material and is inherently robust, it does not leak

Spent nuclear fuel transport casks are the most robust containers in the transportation industry

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Global Nuclear Energy Partnership (GNEP) Site Study

GNEP
To improve the environment

SITE STUDY GOALS AND OBJECTIVES

- Allow the Department of Energy (DOE) to understand the site characteristics and local environment
- Describe the proposed Site and the effected environment
- Use the best and most current information that is readily available
- Use publicly available references
- Inform the local public and stakeholders on the purpose of GNEP and seek their opinions

NEPA PROCESS

- National Environmental Policy Act (NEPA) requires consideration of potential environmental impacts of proposed actions and alternatives
- This process utilizes public involvement to produce more informed and better decision-making
- An Environmental Impact Statement (EIS) is required for any major federal action that may significantly affect the quality of the human environment
- A Programmatic Environmental Impact Statement (PEIS) is prepared for a broad program such as GNEP

DETAILED SITING REPORT

- Detailed Siting Reports (DSR) are being prepared for 11 proposed sites around the U.S.
- DOE will make these publicly available after submission
- Reports will be used to support the DOE Programmatic Environmental Impact Statement (PEIS) for the proposed GNEP facilities
- DSR addresses 16 specific areas that fall into five broad categories:
  1) Facility Planning
  2) Natural Resources
  3) Geology/Hydrology/Seismology/Climatology
  4) Cultural Resources
  5) Demographics/Regulatory Permitting and Water resources
- All these areas are being researched and the references documented
- Field surveys have been performed for Natural Resources, Cultural Resources, and Geology/Hydrology
- Final report will be submitted to DOE by May 1, 2007

REFERENCE SOURCES

- U.S. Fish and Wildlife Service (USFWS)
- Department of Game and Fish
- USEPA's National Priority and CERCLIS lists
- U.S. Census data
- RS Means Construction Cost Data
- Department of Labor
- Cultural Resource databases
- National Oceanic and Atmospheric Administration
- National Climate Data Center
- Local Meteorological Stations

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